

Causes

- **2 main causes**
 - **Hyperparathyroidism** (body excretes more PTH, Ca^{++} reabsorption from bone & kidneys \uparrow)
 - **Cancer** (causes bone destruction & a PTH-like substance \uparrow serum Ca^{++})
- \uparrow **absorption by GI tract and**
 \downarrow **excretion by kidneys (RF)**
- **Hyperphosphatemia**
- **Acidosis**
- **Hemoconcentration** (dehydration, adrenal insufficiency)
- **Excessive antacids, Ca^{++} , Vit D, Vit A**
- **Lithium or thiazide diuretics** (\downarrow Ca^{++} excretion)

Associated Drugs

- **Antacids that contain Ca^{++}**
- **Ca^{++} preparations (IV or oral)**
- **Lithium**
- **Thiazide diuretics**
- **Vit A**
- **Vit D**

S/S

- **Fatigue**
- **Confusion, Altered mental status, Depression, Personality changes**
- **Muscle weakness, Ataxia, \downarrow Muscle tone**
- **Arrhythmias (bradycardia) \rightarrow Cardiac arrest**
- **Thirst, Anorexia, N, V**
- **\downarrow Bowel sounds, Constipation, Abd px**
- **Polyuria, Dehydration**
- **Pathologic fx, Bone pain, Renal stones**

Hypercalcemia

> 10.5 mg/dl Total Serum Ca^{++}
> 5.5 mg/dl Ionized Ca^{++}

Tx

- **Normal saline**
- **Loop diuretics**
- **Dialysis**
- **Corticosteroids (IV & then orally block bone reabsorption & \downarrow GI absorption)**
- **Calcitonin** (but effects short lived)

Labs/Diagnostics

- **Total Serum Ca^{++} > 10.5**
- **Ionized Ca^{++} > 5.5**
- **Digoxin toxicity**
- **X-rays revealing fx**